

## **THIS ISSUE**

***Muskegon Guided Birding, November 11***

***Visit Us by Appointment***

***Snakes Alive in Northern Michigan***

***Thank You Donors!***

***We're Cutting Emissions Far Too Slowly***

# ***The Bull Frog is a 'Mouthy' Monster***



Admittedly, a small animal's confinement within our nature center is a necessarily cramped and starkly unnatural substitute for life in the wild. Surely, some of the behaviors a species exhibits within the ecologically-diverse natural community from which it was removed are likely to be stifled in such a simplified environment. However, in the column entitled *Ain't Misbehavin'* that opens the July 2020 newsletter (<http://naturediscovery.net/pdf/WILD%20TIMES%20July20.pdf>) I discuss the enhanced opportunities we acquire through such intimate proximity to witness behavioral tendencies that seem genetically hardwired into the species regardless of its immediate habitat, natural or not. In fact, such behaviors can be much more difficult to observe in the wild.

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A large Bull Frog is a voracious predator. The concisely written information in a field guide can give you some sense of that voracity. A list of prey items include large insects, like dragonflies, and other invertebrates along with a formidable list of vertebrate prey: fish, mice, snakes, turtles, ducklings, smaller frogs and tadpoles (including those of their own species), etc. However, the details of this activity are usually absent or scant, at best.

Since our Bull Frogs have no fear of us we get to see some semblance of the predatory details on a daily basis. From our towering perspective we have the luxury of finding a Bull Frog's aggressions interesting, even amusing at times, but we're also aware that if we only stood, say, six inches in height we would be far too terrified of the mouthy monster in front of us to engage in such considerations.

We've kept Bull Frogs of various ages and sizes among our educational menagerie continuously for nearly three decades, and currently maintain two adults and a young one. Within a year or two, though, we came to the realization that the best strategy for capturing and keeping wild-caught specimens was to completely bypass the adults, the body length of which might measure as much as seven inches. We found that taking such a big frog out of its relatively limitless aquatic environment then cramping it within the confinement of a thirty-gallon tank does not go well. The cooped frog repeatedly launched itself against the glass and was simply too stressed to settle down and eat.

Better to secure a young one recently metamorphosed from its tadpole stage that measures perhaps barely over an inch in length. Even a ten-gallon tank feels not nearly so confining to such a little hopper. Within a week or two it assimilates smoothly to its new environment and snaps up flies and crickets with gusto.

When generally touching upon frog diet with school children I'll prompt them to name various things that might be on its menu; *insects, flies, grasshoppers, crickets* are expected responses. With the Bull Frog in mind I tell them that I have a new, broader definition: A frog will attempt to eat anything that moves that will fit into its mouth. Study the contour of the head of various frog species and it is apparent that the Bull Frog's head in relation to its overall size is notably wider than others. A wider head extrapolates to a wider-gaping maw. Indeed, the gape of a fully-grown Bull Frog may exceed the circumference of a tennis ball. A lot of swimming, crawling and flying creatures larger than an insect that can fit into *that* opening!



*When our young Bull Frog saw the camera move close to the tank it swam to the glass to see if it was edible.*

Like the puppy of a large dog breed, a young Bull Frog has an outsized appetite and grows rapidly. We currently keep one that we attained as a metamorph early this summer in a community tank shared with a large Leopard Frog, a young Green Frog, two adult Wood Frogs and a large Gray Tree Frog. In the five months that we've had it the young frog has easily tripled its mass.

We used to house a second, smaller Gray Tree Frog in the tank, but had to transfer it to another tank because, frankly, we feared for its life. Upon the Bull Frog's introduction the tree frog slightly exceeded it in size, but mere weeks later the Bull Frog began to surpass it.

One day we found the Bull Frog with its mouth clamped onto the tree frog's hind leg. The victim struggled but it was obvious that it was not strong enough to free itself. I lifted the Bull Frog from the tank, but it refused to let go as the helpless tree frog dangled upside down from its mouth. While I held it Carol had to forcibly pry the Bull Frog's mouth open with forceps to extricate the tree frog. If we chose to leave the tree frog in this tank, we were certain that the little glutton would latch onto it again, and at a time when we may not be present to rescue it. If so, given time, it would most certainly devour the tree frog.

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Over twenty years ago, I first witnessed a Bull Frog's capability of grabbing and swallowing a frog that was only slightly smaller in size. In a Lansing Community College youth class I was demonstrating to the students how to identify a Bull Frog versus a Green Frog. I had placed an adult of each species together in the same see-through tote so students could differentiate the features side-by-side. The Green Frog was about twenty percent smaller than the Bull Frog. Without warning before the students' eyes the Bull Frog lunged and grabbed the Green Frog by the head.

They were at first alarmed as the Green Frog struggled to pull free and expected that I would rescue it. I informed them that this was natural behavior for a Bull Frog; in the wild Bull Frogs eat smaller frogs all the time. I asked whether we should let the drama play out and see how it would end. They enthusiastically agreed. I then speculated aloud that this Green Frog was most certainly too big for the Bull Frog to eat. It would eventually give up and let go... Wrong.

By the end of the class time the Bull Frog had managed to engulf the Green Frog's entire body, its head apparently pushed deep into the stomach by then. On the other end only the legs jutted beyond its open mouth. I returned to the nature center with the frogs in this state.

Later that evening with the Bull Frog now back in its tank the head-first digestive process continued. Before going to bed a peek at the progress revealed only the Green Frog's webbed feet protruding. Upon

inspection the following morning the Bull Frog's mouth was finally free of the obstruction and able to close again, but its belly, from a human's perspective, appeared painfully distended. If a frog's facial features could express gastric discomfort there was no indication. The perpetually deadpan expression could just have likely belied thoroughly-sated contentment.

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Our adult Bull Frogs are about six years old and have been in our possession since they were metamorphs. They've come to know the routine, and they understand the implications of our looming presence in front of the tank. Open the lid and one or both tilt their heads upward in hopeful anticipation.

We feed them night crawlers a few times a week. Carol or I will lower a fat one into the tank with forceps. The frog sees the motion and jumps to rip it from our grasp, but it is a relatively small food item compared to the meatier fingers looming a few inches above it. At least half the time the frog will leap past the worm and latch on to a finger or thumb, then won't let go! Lifting the assaulted hand up and out of the tank, the frog dangles, finally loses its grip and falls back into the water, unaware or undeterred by the fact that an entire hand, arm and larger body are attached to the item it has chosen to eat.

By this point you may be wondering about frog teeth. The upper and lower mandibles are lined with an arc of short, rasp-like projections the purpose of which is to catch and grip the skin, exoskeleton, scales, hair, or feathers of the target. A finger with a Bull Frog mouth wrapped around it feels as though it is being pinched by coarse sandpaper tongs. Only occasionally, the teeth may abrade the skin enough to draw a trace of blood. Since this dentition, like that of a snake, isn't suited to take a bite off of anything, the Bull Frog is required, again, like a snake, to consume the prey whole.



*Our female Bull Frog dangles and thrashes after grabbing Carol's finger.*

At our nature center or at off-site exhibits visiting kids and even adults are excited to dangle a hand over the open Bull Frog tank. When the wiggling fingers catch a frog's attention, it turns its gaze upward. Suspense builds, as, like a tautly-coiled spring, you never know when it will suddenly launch itself toward the hand. Most who attempt this, reflexively yank the hand away when the frog leaps. It takes resolve to hold it still, allowing the frog to 'capture' the faux-prey. It may then dangle for a second or two before falling back into the water. How's that for interactive?

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While night crawlers are, by far, the most commonly fed food, we sometimes drop a netful of minnows into the water. The Bull Frog is the only native frog that is adept at taking prey that moves beneath the water's surface. However, it must first detect the movement with bulging eyes that are only operative above the surface. Upon sensing the close passage of the swimming minnow the frog deftly dunks its head under the surface to take a stab at it. Most of the time it comes up empty but repeated dunks yield eventual success. If a dozen minnows dumped into the tank have nowhere to hide all will be consumed by the pair of frogs in under an hour.

When available, naturally, we capture small to medium-sized individuals of the Green Frog to further round the vertebrate portion of our Bull Frogs' menu. The Green Frog is the most abundant and ubiquitous of Michigan frogs, so it is the species we strive to feed to the Bull Frogs, as well as to our frog-eating snake species.

Reminiscent of an alligator or crocodile, a Bull Frog will routinely lunge and grab at moving objects that are even larger - sometimes *much* larger - than it can possibly fit into its mouth or completely consume.



Almost always, of course, the would-be prey will be too strong to contain, and quickly wrest itself from the Bull Frog's grasp. Other times, if the struggling animal, despite its larger size, cannot pull free, the frog will continue to force the grasped appendage deeper down its throat and ultimately start to digest it.

Check out this video in which a live adult American Coot was found with its head stuffed into a Bull Frog's mouth: <https://www.youtube.com/watch?v=ISBEotnOc7k>. Experience with our Bull Frogs leaves little doubt in our minds: that coot was a goner if a human had not intervened.



*A medium-sized Green Frog's legs protrude from our large Bull Frog's mouth.*

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Visit and interact with our Bull Frogs as closely as you wish or dare. There are a number of ways: Visit our private nature center by appointment; visit one of our exhibits at a public event as listed in our newsletters; request the Bull Frogs' appearance at an arranged presentation in the classroom, at a birthday party or another venue of your choosing.

—Jim McGrath



*Northern Shovelers feed in a tight eddying formation.*

There is just one spot remaining for our guided trip to the Muskegon area for some great fall birding. Jim leads and drives a maximum of just five adult participants on this full-day odyssey to tally as many species as possible through habitats that harbor *thousands* of birds.

The expansive holding ponds at Muskegon Wastewater Facility, several miles from Lake Michigan, are migratory waterfowl magnets. The water birds in turn, attract predatory hawks, eagles and owls. Open areas north and south of the ponds offer potential for a slew of other species, including eagles, Rough-legged Hawks, kestrels, shrikes, Snow Buntings and lots more.

We'll head to Lake Michigan to pick up more birds from the shore and on the breakwater. Diving ducks, loons, grebes and more, forage here. The uncommon Purple Sandpiper migrates along Lake Michigan in late fall. With luck, we may find one foraging on the rocky breakwater.

Weather-permitting, we should tally nearly 50 species. Minimal walking is required. Participants will receive a Michigan Birds checklist to tally the day's finds.

**COST:** Only \$80/person, includes transportation. Meet at Nature Discovery. With notice, we can also arrange to pick you up at another more convenient location. Contact us to reserve the last roster space.

## ***Muskegon Area Guided Birding***

***Saturday, November 11  
6:30am to 4:30pm***



# Nature Discovery

5900 N. Williamston Road  
517.655.5349

Williamston, MI 48895

[naturedisc87@gmail.com](mailto:naturedisc87@gmail.com)

[www.naturediscovery.net](http://www.naturediscovery.net)



*The shy Blue-spotted Salamander peeks at a visitor.*

## Visit Our Nature Center by Appointment

**Suggested Minimum Donation:**  
**\$5/person/hour**

The sky's the limit for natural learning here – with a Michigan twist! Adults, couples and families are welcome to schedule an intimate indoor and/or outdoor visit to what we call “The Biggest Little Nature Center in Michigan,” and “Home to the Largest Zoo of Michigan-native Reptiles and Amphibians.” We will bring snakes, turtles, frogs and salamanders out of tanks to interact with adults or kids of any age.

Identify and feed “the grand slam of Michigan turtles” - all ten species native to our state! Meet, pet and feed “Milberta”, our always hungry Red-footed tortoise.

Handle any or all of Michigan's three species of garter snakes while learning how to tell them apart, then watch them gobble up worms, tadpoles and minnows. Hold or “wear” a gentle 6-foot Black Ratsnake – the largest in the state!

Many more snakes, turtles, frogs and salamanders to identify and feed. Take a guided walk on our trails to identify birds, bugs, trees, vines, and invasive plants.

Ask us about...

- ... field trips for academic classes, pre-K thru college.
- ... volunteer opportunities for high school students and adults.
- ... a guided interpretive experience at a local natural area of your or our choosing for your small group of students, adults or families.



*Hold our little hognose snake.*



*From October 23 thru 26, in cooperation with Straits Area Audubon Society, Jim presented 'Michigan Snakes Alive' to over 300 school students in northern Michigan communities, including Cheboygan, Pellston, Petoskey, Harbor Springs and Wolverine. Special thanks to Jim Bricker and Eowyn Bates.*





***Thank you to all past and current supporters of our mission, including these donors the past month...***

***Dave Chapman  
Jan Heminger  
Patrick Kline  
(Cedar Swamp  
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Annelise Rommeck  
Brennan Rommeck  
Gene Wasserman  
The Zellner Family***



## ***We're Cutting Emissions Far Too Slowly***

Window for Meeting Key Climate Goal is Even Narrower than Thought.

<https://www.nytimes.com/2023/10/30/climate/carbon-budget-paris-agreement.html?smid=url-share&fbclid=IwAR114PP-Vsv8BWWK9q1hbONqhCRjs2U3z1XS7DUH2cgYVEtBGrjW0wyKyYg>

Michigan Poised to Join States Requiring 100 Percent Clean Energy.

<https://insideclimatenews.org/news/07112023/michigan-clean-energy-laws-whitmer/>

Are Potato Chip Bags Recyclable? Snack Companies Try New Packaging.

<https://m.economictimes.com/industry/cons-products/fmcg/are-potato-chip-bags-recyclable-snack-companies-try-new-packaging/articleshow/99041513.cms>

Trash or Recycling? Why Plastics Keep Us Guessing.

[https://www.nytimes.com/interactive/2022/04/21/climate/plastics-recycling-trash-environment.html?action=click&pgtype=Article&state=default&module=stylein-climate&variant=show&region=BELOW\\_MAIN\\_CONTENT&block=storyline\\_flex\\_guide\\_recirc](https://www.nytimes.com/interactive/2022/04/21/climate/plastics-recycling-trash-environment.html?action=click&pgtype=Article&state=default&module=stylein-climate&variant=show&region=BELOW_MAIN_CONTENT&block=storyline_flex_guide_recirc)

-JM



*The next generation would be justified in looking back at us and asking, “What were you thinking? Couldn’t you hear what the scientists were saying? Couldn’t you hear what Mother Nature was screaming at you?” - Al Gore*

*I don’t want you to be hopeful. I want you to panic. I want you to feel the fear I feel every day. I want you to act. I want you to act like you would in a crisis. I want you to act like your house is on fire, because it is. - Greta Thunberg*

*The personal actions that cut climate pollution fast are to go flight-, car-, and meat-free. Start with the one that feels most feasible for you; if you can’t totally go without, aim to cut your consumption today at least in half. – Kimberly Nicholas, Under the Sky We Make*

*What if we had storytelling mechanisms that said it is important that you know about the well-being of wildlife in your neighborhood? –Robin Wall Kimmerer*



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Concerned Scientists**  
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